CIW Objectives Mapping to IDOE – CTE Information Technology Academy
Unit 13 - Networking

IDOE – Information Technology	CIW Foundations Objectives
Unit 13 Networking	
13.1 Students demonstrate knowledge of basic network classifications and topologies	
13.1.1 Interpret basic networking terminology.	3.1.1 Define basic data and telephony network concepts, including: Voice over IP (VOIP), AC/DC requirements for telephony and data equipment.
13.1.2 Differentiate between LANs, CANs, MANs, and WANs	**3.1.6** Define local area network (LAN) and wide area network(WAN).
13.1.3 Demonstrate knowledge of how to turn LANs into CANs, MANs, and WANs.	**3.1.7** Identify core components of the current Internet infrastructure and how they relate to each other, including: routers, networks access points (NAPs), backbone networks.
13.1.4 Compare/contrast basic network topologies **13.1.6** Compare/contrast the basic topologies (e.g., star ring, bus).	**3.1.3** Identify basic network topologies (e.g., ring, mesh).
13.1.5 Compare/contrast packet-switching techniques	3.2.4 Explain the routing process, including static routing versus dynamic routing, interior versus exterior routing protocols.
13.1.7 Compare the characteristics of connection-oriented and connectionless protocols.	**3.1.4** Define the Open Systems Interconnection reference model (OSI/RM) in terms of packet creation.
13.1.8 Identify and evaluate standard high-speed networks	**1.3.2** Identify various types of Internet bandwidth technologies (link types), including: T and E carriers, Fractional T and E lines, common DSL/ADSL and cable speeds.
13.1.9 Identify and evaluate emerging networks.	
13.1.10 Differentiate network storage devices techniques (e.g., fiber channel, SCSI, ISCSI).	**3.7.1** Identify maintenance issues for common system elements, including: IRQs, DMA, I/O cards, NICs, motherboards, SCSI, IDE/ATA, serial ATA (including hard drives).
13.2 Students demonstrate knowledge of local-area networks trends and issues.	
13.2.1 Specify reasons for installing a network.	**3.1.8** Identify core components of a Network Operations Center (NOC).
13.2.2 Trace the evolution of networks.	**1.2.2** Explain Internet history and define current protocols, including: Ipv4, Ipv6,

	related protocols.
13.2.3 Analyze current trends and developments in LANs and WANs wireless networks.	**3.1.7** Identify the core components of the current Internet infrastructure and how they relate to each other, including routers, network access points (NAPs), backbone networks.
13.3 Students demonstrate knowledge of network physical layer.	
13.3.1 Differentiate between baseband and broadband transmissions.	**1.3.2** Identify various types of Internet bandwidth technologies (link types), including: T and E carriers, Fractional T and E lines, common DSL/ADSL and cable speeds.
13.3.2 Identify and evaluate the criteria used in making cable selection decision (e.g., physical properties, transmission technologies, transmission span, bandwidth, topology, security, noise immunity installation considerations, cost). **13.3.3** Differentiate between physical media types (e.g., coaxial, twisted-pair, optical fibers) and interfaces. **13.3.4** Compare/contrast cable specifications (e.g., CAT 5, CAT 5E, CAT 6+) **13.3.5** Describe types of cable connectors and grounding techniques. **13.3.6** Describe typical cabling infrastructures.	**3.2.1** Distinguish among common cable types used in networking (e.g., CAT 5, CAT 6, crossover).
13.3.7 Identify cable standards (e.g., ANSI, EIA/TIA-568, EIA/TIA-569, TWSS)	**3.2.3** Distinguish between Ethernet and Token Ring networks.
13.3.8 Identify the advantages and disadvantages of cabling systems.	
13.3.9 Describe and analyze typical problems associated with cable installation.	
13.3.10 Demonstrate cable testing and tolerance levels.	
13.3.11 Demonstrate knowledge of radio wave propogation	
13.4 Students demonstrate knowledge of network connectivity basics	
13.4.1 Identify and describe the characteristics and functions of point-to-point channels, switched, and meshed networks. **13.3.4** Explain types of interoperability.	**3.1.3** Identify basic network topologies (e.g., ring, mesh).
13.4.2 Define characteristics and functions of broadcast channels.	**2.7.6** Evaluate the benefits of using frames in a site, and determine appropriate use.
13.4.3 Analyze software used to connect network	**3.2.2** Identify hardware and software

devices.	connection devices and their uses, including: network interface card, modem, cabel/DSL modem, hub, router, switch, firewall.
13.4.5 Describe and differentiate Internet, Intranet, and Extranet usage and connectivity.	**1.5.8** Distinguish among the following from a business standpoint: Intranet, Extranet, Internet.
13.5 Students demonstrate knowledge of protocol concepts.	
13.5.1 Compare/contrast the advantages and disadvantages of standard protocols.	**3.1.5** Define the nature, purpose and operation essentials of Transmission Control Protocol/Internet Protocol (TCP/IP)
13.5.2 Demonstrate knowledge of network protocols.	**1.2.2** Explain Internet history and define current protocols, including: IPv4, Ipv6, related protocols. **3.3.6** Identify basic Ipv6 concepts. **1.3.1** Define the purpose of remote access protocols, including: Point-to-Point Protocol (PPP), Point-to-Point over Ethernet (PPPoE). **1.3.3** Map protocols to specific business services (e.g., SMTP, IMAP, and POP3 to email; HTTP and HTTPS to Web browsers; FTP to file transfer; NNTP to news servers.
13.6 Students demonstrate knowledge of the Open Systems Interconnection (OSI) standard (ISO Standard 7498)	
13.6.1 Identify and analyze the benefits of using a layered network model. **13.6.2** Identify and analyze the seven layers at which decisions must be made according to the OSI standard. **13.6.3** Compare OSI stack positions and their relationship to one another. **13.6.4** Describe actions to be performed at each of the OSI physical layers. **13.6.5** Explain the purposes of, and procedures for, encapsulation and decapsulation. **13.6.6** Describe structure and function of an associate protocol date unit (PDU) at each corresponding OSI layer.	**3.1.4** Define the Open Systems Interconnection reference model (OSI/RM) in terms of packet creation.
13.7 Students demonstrate knowledge of communications standards for networks.	
13.7.1 Explain digital data communication techniques and standards, including asynchronous	**3.2.3** Distinguish between Ethernet and Token Ring networks.

and synchronous transmission, error detection and correction codes, and physical interfaces. **13.7.2** Describe data-transmission basics. **13.7.3** Demonstrate knowledge of various encoding and framing methods (e.g., Manchester, B8Z8)	
13.8 Students demonstrate knowledge of data-encoding basics	
13.8.1 Apply and convert amongst the four numbering systems: Binary, octal, hexadecimal, and decimal numbering system.	
13.8.2 Demonstrate ASCII representations of characters.	
13.8.4 Convert between single byte, double byte, and multibyte coding structures (ASCII, EBCDIC, UNICODE).	
13.8.4 Describe the conversion of analog speech to digital	
13.9 Students demonstrate knowledge of IP addressing schemes	
13.9.1 Explain how names and addresses are determined for networks.	**3.1.5** Define the nature, purpose and operations essentials of Transmission Control Protocol/Internet Protocol (TCP/IP). **3.3.1** Explain IP addressing and the concept of uniqueness, including: IP address, subnet mask.
13.9.2 Identify components of a network address in dotted decimal form (e.g., Class A, B, C). **13.3.3** Identify the class of network to which a given address belongs.	**3.3.2** Define IP address classes used on the Internet and determine valid IP addresses.
13.9.4 Explain DHCP – Dynamic Host Control Protocol.	**3.2.5** Identify common TCP/IP parameters, including: IP address (static versus DHCP), subnet mask, default gateway, DNS information.
13.9.5 Differentiate between default subnet masks and variable length subnet mask. **13.9.6** Demonstrate the relationship between an IP address and its associated subnet mask. **13.9.7** Create custom subnet masks to meet network design requirements.	**3.3.4** Determine default subnet mask and describe the ANDing process.
13.9.8 Demonstrate differences between classfull and classless addressing schemes.	**3.3.5** Define classless Interdomain Routing (CIDR)

IDOE – Information Technology	CIW Foundations Objectives
Unit 14 Network Architecture	
14.1 Students demonstrate knowledge of the basics of network architecture.	
14.1.1 Demonstrate knowledge of the characteristics and uses of network components (e.g., hub, switches, routers, firewall).	**3.2.2** Identify hardware and software connection devices and their uses, including: network interface card, modem, cabel/DSL modem, hub, router, switch, firewall.
14.1.2 Identify and analyze LAN transmission methods (deterministic vs. nondeterministic).	**3.1.5** Define the nature, purpose and operations essentials of Transmission Control Protocol/Internet Protocol (TCP/IP).
14.1.3 Demonstrate knowledge of broadband and baseband transmission methods and standards.	**3.2.3** Distinguish between Ethernet and Token Ring networks.
14.1.4 Indentify and analyze LAN transmission media (e.g., twisted pair, fiber-optic, wireless).	**3.2.1** Distinguish among common cable types used in networking (e.g., CAT 5, CAT 6, Crossover).
14.1.5 Evaluate LAN medium-access protocols(e.g., CSMA/CD, CSMA/Computer Applications, token ring, FDDI)	**3.2.3** Distinguish between Ethernet and Token Ring networks.
14.1.6 Identify and analyze the components of, and relationships within the OSI 8802 (IEEE 802) protocol suite. **14.1.7** Identify and analyze LAN Performance factors (e.g., signal attenuation, signal propagation delay).	**3.2.3** Distinguish between Ethernet and Token Ring networks.
14.1.8 Explain and illustrate the reasoning for OSI modeling.	**3.1.4** Define Open Systems Interconnection reference model (OSI/RM) in terms of packet creation.
14.1.9 Differentiate between a physical and logical topology.	**3.1.3** Identify basic network topologies.
14.2 Students demonstrate knowledge of the basics of Ethernet technology.	
14.2.1 Describe the differences in Ethernet framing.	**3.2.3** Distinguish between Ethernet and Token Ring networks.
14.2.2 Select appropriate use of basic Ethernet configurations (e.g., hub bridges, server, and switch).	**3.2.2** Identify hardware and software connection devices and their uses, including: network interface card, modem, cabel/DSL modem, hub, router, switch, firewall.

14.2.3 Evaluate the advantages and disadvantages of Ethernet networks as they relate to other networks..	**3.2.3** Distinguish between Ethernet and Token Ring networks.
14.3 Students demonstrate knowledge of the TCP/IP protocol suite.	
14.3.1 Compare the basics of TCP/IP layers, components, and functions. **14.3.2** Identify how the TCP layers relate to the OSI model. **14.3.3** Compare and contrast TCP and IP delivery services.	**3.1.5** Define the nature, purpose and operation essentials of Transmission Control Protocol/Internet Protocol (TCP/IP)
14.3.4 Identify TCP/IP applications and services (e.g., Rlogin, SMTP, telnet, FTP, DNS, NFS).	**3.4.2** Identify the functions and features fo common Internet-based services, and identify the protocols used by each, including: file, print, HTTP, proxy, caching, mail, mailing list, instant messaging, media, DNS, FTP, news, certificate, directory, catalog, fax, transaction, mirrored, UNIX.
14.3.5 Explain TCP/IP protocol details (e.g., Internet addresses, ARP, RARP, IP datagram format, IP datagrams, TCP segment format).	**3.2.5** Indentify common TCP/IP network parameters, including: IP address (static vs. DHCP), subnet mask, default gateway, DNS information. **3.6.2** Identify when to use various diagnostics tools for troubleshooting and resolving Internet problems, including: ping, winipcfg, ipconfig, route, arp, traceroute, netstat, network analyzers (packet sniffing).
14.3.6 Describe and analyze how TCP/IP uses prioritization and differentiation (e.g., Q5)	**3.2.4** Explain the routing process, including: static routing versus dynamic routing, interior versus external routing protocols.

IDOE – Information Technology	CIW Foundations Objectives
Unit 16 Wide-Area Networks	
16.1 Students demonstrate knowledge of basic telecommunications and the interconnection of networks.	
16.1.1 Describe and analyze different types of WAN connections.	**3.2.2** Identify hardware and software connection devices and their uses, including: network interface card, modem, cabel/DSL modem, hub, router, switch, firewall.
16.1.2 Describe and analyze point-to-point (PPP) interconnection.	**1.3.1** Define the purpose of remote access protocols, including: Point-to-Point (PPP), Point-to-Point over Ethernet (PPPoE).
16.1.3 Describe and analyze basic telecommunications services (e.g., satellite, circuit switching, packet switching, wireless, building-to-building).	**3.1.1** Define basic data and telephony network concepts, including: convergence, Voice-over-IP (VoIP), AC/DC requirements for telephony and data equipment.
16.1.4 Describe and analyze communications carriers and their services.	**3.1.7** Identify the core components of the Internet infrastructure and how they relate to each other, including: routers, network access points (NAPs), backbone networks.
16.1.5 Identify the role of telecommunications tarrifs.	
16.2 Students assess user needs for wide-area network.	
16.2.1 Determine availability from LAN to meet requirements of WAN.	**3.1.6** Define local-area network (LAN) and wide-area network (WAN).
16.2.2 Determine the speed needed between sites to access applications.	**1.3.2** Identify various types of Internet bandwidth technologies(link types), including: T and E carriers, fractional T and E lines, common DSL/ADSL and cable speeds.
16.2.3 Determine the subnets needed on the WAN including VSLM.	**3.3.4** Determine default subnet masks and describe the ANDing process.
16.2.4 Evaluate transmission options.	**1.2.5** Connect systems to the Internet and other networks using basic cable/ADSL and wireless equipment.
16.3 Students design WAN standards.	
16.3.1 Relate voice, data concepts, and video to wide-area networks.	**3.4.2** Identify the functions and features of common Internet-based services, and identify protocols used by each, including: file, print, HTTP, proxy, caching, mail,

	mailing list, instant messaging, media, DNS, FTP, news, certificate, directory, catalog, fax, transaction, mirrored, UNIX.
16.3.2 Select primary and backup circuits. **16.3.3** Evaluate analog and digital transmission for cost performance, and reliability.	**3.2.5** Identify common TCP/IP network parameters, including: IP address (static vs. DHCP), subnet mask, default gateway, DNS information.
16.3.4 Integrate firewalls to separate trusted networks over a WAN	**3.5.6** Distinguish among the following security zones: DMZ (including dual-homed and triple-homed firewalls) VLAN, intranet, extranet.
16.3.5 Establish a Virtual Private Network (VPN) over WAN link.	**3.5.5** Describe Virtual Private Network (VPN) and the purposes of remote access protocols, including: Point-to-Point Tunneling Protocol (PPPTP), Layer 2 Tunneling Protocol (L2TP).
16.3.6 Determine routers needed to connect to LAN.	**3.2.2** Identify hardware and software connection devices and their uses, including: network interface card, modem, cable/DSL modem, hub, router, switch, firewall. **1.2.5** Connect system to the Internet and to other networks using basic cable/ADSL and wireless equipment.
16.3.7 Interconnect LANs using WAN services.	**1.3.1** Define the purpose of remote access protocols, including: Point-to-Point (PPP), Point-to-Point over Ethernet (PPPoE).
16.3.8 Demonstrate cost-savings approaches (e.g., voice/video/data compression).	**3.4.2** Choose the correct server to fulfill a specific business/organizational need. **1.5.11** Use document and multimedia file formats, including: PDF, RTF, PostScript (PS), AVI, MPEG, MP3, Ogg Vorbis. Convert between file formats when appropriate.
16.3.9 Discuss complexities of routing and multiple services over a WAN.	**1.3.2** Identify various types of Internet bandwidth technologies(link types), including: T and E carriers, franctional T and E lines, common DSL/ADSL and cable speeds.
16.3.10 Evaluate network performance needs, establish data priorities and integrate Q.O.S.	**1.1.7** Identify responsibilities, task and skills of a server administrator, including: e-mail/groupware administrator, Web Server administrator. **1.1.8** Identify responsibilities, task and skills of a network engineer.

IDOE – Information Technology	CIW Foundations Objectives
Unit 18 – Security Fundamentals	
18.1 Students examine the history and components of information assurance.	
18.1.1 Identify significant developments of computer security and the trend towards information assurance.	**3.5.1** Identify typical attacks on clients and procedures to counter each attack type. **1.10.2** Identify ways that authentication, digital certificates, encryption and firewalls provide Web security.
18.1.2 Describe the evolution of major threats to computers including physical security, viruses, worms, spyware, malware, and hacker attempts and the influence this has had on the current state of information assurance.	**1.9.2** Identify advantages and disadvantages of using cookies, and set cookies, including: setting a cookie without user knowledge automatically accepting cookies versus query, remembering user actions, security and privacy concerns. **1.10.1** Define three major types of encryption. **1.10.3** Identify ways that encryption helps enforce data confidentiality, data integrity and non-repudiation to secure end-user transactions. **1.10.4** describe a computer virus and explain how to protect your computer form virus attacks. **1.10.10** Distinguish between a virus and a worm. **1.10.11** Demonstrate the functionality of spyware. **3.5.8** Identify the purpose of an uninterruptible power supply (UPS), and list common concerns and configuration parameters.
18.1.3 Discuss the role of the government in evolving standards and security initiatives.	**2.7.3** Verify compliance with government and industry accessibility standards, including: W3C Web Accessibility Initiative (WAI), U.S. Government Section 508, Americans with Disabilities Act (ADA).
18.1.4 Describe the role of networking and the increased need for security and information assurance..	**1.10.5** Explain the functions of patches and updates to client software and associated problems, including: desktop security, virus protection, encryption levels, Web

	browsers, e-mail clients.
18.1.5 Discuss how legislative and ethical issues and standards have impacted network security (e.g., HIPPA, GLBA, SOZ).	**2.7.3** Verify compliance with government and industry accessibility standards, including: W3C Web Accessibility Initiative (WAI), U.S. Government Section 508, Americans with Disabilities Act (ADA). **1.8.2** Identify ethical issues when communicating with others using Internet based technology.
18.1.6 Discuss the need for confidentiality, integrity, and availability of information (CIA).	**1.10.3** Identify ways that encryption helps enforce data confidentiality, data integrity and non-repudiation to secure end-user transactions.
18.1.7 Discuss the need for authentication and non-repudiation of information. (e.g., PKI)	**3.5.7** Define fundamental PKI concepts.
18.1.8 Illustrate security risks and associated safeguards.	**3.5.1** Identify typical attacks on clients and procedures to counter each attack type. **1.9.4** Identify issues to consider when configuring the Desktop, including: configuring browser (proxy configurations, client-side caching).
18.1.9 Examine the role of government industry academia partnership in increasing the information assurance levels domestically and globally.	**1.10.1** Define three major types of encryption. **1.10.3** Identify ways that encryption helps enforce data confidentiality, data integrity and non-repudiation to secure end-user transactions.
18.1.10 Identify and discuss careers and certification programs associated with security.	**1.1.1** Distinguish between individual job roles within the IT industry and the IT profession as a whole. **1.1.8** Identify responsibilities, tasks and skills of a network engineer. **1.1.9** Distinguish between a security manager and a security analyst/consultant.
18.1.11 Discuss the role of risk management in protecting information and information systems.	**1.10.6** Identify steps to take when you receive an unexpected attachment (e.g., via e-mail, or instant message client). **1.10.7** Identify steps to make when an attack is suspected **3.5.8** Identify the purpose of an uninterruptible power supply (UPS), and list common concerns and configuration parameters.
18.1.12 Examine the role of policy in protecting information and information systems.	**1.10.2** Identify ways that authentication, digital certificates, encryption and firewalls

	provide Web security.
18.2 Students describe the components associated with computer and network security systems.	
18.2.1 Identify and discuss biometric systems (e.g., fingerprinting, retina scans, voice analysis, etc.). **18.2.2** Describe two-factor authentication techniques (e.g., smart cards).	**3.5.1** Identify typical attacks on clients and procedures to counter each type of attack. **3.5.4** Define authentication principles, including: password resetting, password aging.
18.2.3 Explain the role of digital signatures in achieving information assurance and integrity. **18.2.4** Explain the role of digital certifications in achieving information assurance.	**1.10.2** Identify ways that authentication, digital certificates, encryption and firewalls provide Web security.
18.2.5 Explain the role of hashing algorithms (e.g., MD5, SHA1) in achieving information assurance and integrity.	**1.10.1** Identify the three major types of encryption. **1.10.3** Identify ways that encryption helps enforce data confidentiality, data integrity and non-repudiation to secure end-user transactions.
18.2.6 Discuss the importance for the need for an organizational policy addressing confidentiality.	**1.14.1** Define privacy concerns. **1.14.3** summarize personal privacy expectations versus and organization's right to know how its provided services are being used. **1.14.5** Explain the purpose of encrypting company transmissions and establish company encryption policies.
18.2.7 Discuss the need, importance, and implementation of intrusion detection. **18.2.8** Discuss the need, importance, and implementation of firewalls.	**3.5.6** Distinguish among the following security zones: DMZ (including dual-homed and triple-homed firewalls), VLAN, intranet, and extranet.
18.2.9 Discuss the need and importance of anti-virus, anti-spyware, and content filtering.	**3.5.1** Identify typical attacks on clients and procedures to counter each type of attack **3.5.2** Recognize and avoid social engineering attacks. **1.10.4** Describe a computer virus and explain how to protect your computer from virus attacks. **1.10.11** Demonstrate the functionality of spyware
18.2.10 Discuss the importance of BIOS security (passwords, prevention of BIOS changes).	**3.7.1** Identify maintenance issues for common system elements, including: IRQs, DMA, I/O cards, NICs, motherboards, SCSI, IDE/ATA, serial ATA (including hard drives).
18.2.11 Discuss the need and importance of	**1.10.5** Explain the functions of patches and

| security updates. | updates to client software and associated problems, including: desktop security, virus protection, encryption levels, Web browsers, e-mail clients. |

CIW Objectives mapping to IDOE – Information Technology
Unit 31 – Web Site Development and Management

IDOE – Information Technology	CIW Foundations Objectives
Unit 31 – Web Site Development and Management	
31.1 Students implement secure network management activities and procedures.	
31.1.1 Create basic XHTML document that includes graphics and multimedia.	**2.1.3** Use HTML tags to format paragraphs and text. **2.2.1** Incorporate images into HTML pages. **2.9.2** Create a Web page using XHTML1.0 standards.
31.1.2 Link Web documents.	**2.1.4** Create HTML hyperlinks for text, images, local files and remote sites (internal and external links..
31.1.3 Utilize forms in an XHTML document..	**2.4.1** Construct and test HTML forms.
31.1.4 Create and format a table on an XHTML document.	**2.1.5** Design and format HTML tables to present information in an organized way.
31.2 Students develop a Web site.	
31.2.1 Use documentation standards to record design and development decisions.	**2.7.2** Create initial Web site diagram (i.e., story board or prototype) and translate into a site map. **2.13.4** Document a Web site plan.
31.2.2 Integrate scripting into an XHTML document.	**2.6.2** Define and compare popular client-side and server-side programming languages.
31.2.3 Employ object oriented techniques in Web development.	**2.17.1** Compare popular client-side and server-side programming languages, including: JavaScript, (including VBScript and Jscript), Java, .NET, C, C++, Visual Basic, C#.
31.2.4 Utilize data storage techniques in Web development. **31.2.5** Employ control structures in Web development (e.g., naming schemes, content hierarchies).	**2.17.3** Identify the relationship of SQL to Internet-enabled databases, and conduct simple database queries.

31.2.6 Create and call functions and procedures in Web development.	**2.19.1** Identify ways to use additional technologies to provide custom features to an end user (e.g., using JavaScript to detect Web browser type, using cookies).
31.3 Students demonstrate knowledge of content management.	
31.3.1 Test site/application after content is updated to ensure integrity.	**2.12.1** Test and validate Web documents. **2.12.3** Test Web pages in multiple browsers.
31.3.2 Perform updates in a timely manner. **31.3.3** Perform updates in accordance with application requirements. **31.3.4** Update content only on appropriate pages in relevant objects of the database. **31.3.5** Update and review links. **31.3.6** Utilize appropriate tools to identify and update content.	**2.14.4** Manage existing sites (e.g., remove dead links and /or upgrade connectivity when necessary).
31.3.8 Log all update activities	**2.12.4** Document results of Web site functionality testing.
31.4 Students support Web application management.	
31.4.1 Plan rollout and facilitate handoff to customer.	**2.14.3** Identify processes of pre-launch site/application functionality testing, including: checking hot links, testing with various browsers, testing against corruption of your e-commerce site, testing with various speeds of connection.
31.4.2 Integrate customer feedback.	**2.13.5** Obtain and document feedback, then improve the site, including: working closely with sales and marketing to evaluate the effectiveness. **2.15.1** Identify ways to elicit feedback from management and customers.
31.4.3 Perform application maintenance.	**2.14.4** Manage existing sites (e.g., remove dead links and /or upgrade connectivity when necessary).
31.4.5 Monitor Web site performance metrics.	
31.5 Students integrate scripting into XHTML document.	
31.5.1 Explain the concept of scripting technologies. **31.5.3** Explain client-side scripting. **31.5.4** Construct and insert a client-side script into a Web page. **31.5.5** Construct and insert comments into client-side script.	**2.6.2** Define and compare popular client-side and server-side programming languages.

IDOE – Information Technology	CIW Foundations Objectives
31.5.6 Explain server-side script. **31.5.7** Compare and contrast the server-side script to the client-side script. **31.5.9** Construct and insert server-side script into a Web page. **31.5.10** Construct and insert comments into server-side script.	
31.5.2 Identify scripting languages (e.g., JavaScript, VBScript, and ActionScript). 31.	**2.17.1** Compare popular client-side and server-side programming languages, including: JavaScript, (including VBScript and Jscript), Java, .NET, C, C++, Visual Basic, C#.
31.5.8 Identify "server page" development technologies (e.g., JSP, ASP).	**2.17.2** Define Common Gateway Interface (CGI) methods, including: .NET, JavaServer pages (JSP), Server-side JavaScript (SSJS), Active Server Pages (ASP), PHP, Hypertext Preprocessor (PHP).
31.5.11 Develop criteria for selecting server-side or client-side script given a Web page development task.	**2.19.1** Identify ways to use additional technologies to provide custom features to an end user (e.g., using JavaScript to detect Web browser type, using cookies).

CIW Objectives mapping to IDOE – Information Technology
Unit 32 – Web Site Development and Management – XHTML Fundamentals

IDOE – Information Technology	CIW Foundations Objectives
Unit 32 – Web Site Development and Management – XHTML Fundamentals	
32.1 Students create a basic XHTML document.	
32.1.1 Explain the need for developers to create and maintain XHTML script when utilizing Web document authoring tools.	**2.1.1** Relate the history of markup languages to current techniques and technologies, including: Standard Generalized Markup Language (SGML), previous version of Hypertext Markup Language (HTML).
32.1.2 Discuss the basic principles of XHTML, HTTP, HTTPS, and TCP/IP and their functional relationships with browsers. .	**2.1.2** Identify the format and various versions of HTML, including: HTML 4.01, Extensible HTML (XHTML). **2.9.1** Define the three flavors of the XHTML standard (Strict, Transitional, Frameset)
32.1.3 Plan a basic XHTML document considering subject, audience, layout, color, links and graphics.	**2.7.2** Create an initial Web site diagram (i.e., a story board or prototype), and

	translate it into a site map.
32.1.4 Create meta-data.	**2.1.3** Use HTML tags to format paragraphs and text.
32.1.5 Utilize XHTML tags that display and format Web content to create a basic Web page in a text editor.	**2.9.2** Create a Web page using the XHTML 1.0 standards.
32.1.6 Add comments to the XHTML document.	**2.1.7** Add comments to HTML code and document page/site creation.
32.1.7 Print XHTML code. **32.1.8** Display a basic Web page created in a text editor in a browser.	**2.11.4** View source code and preview Web pages in a browser.
32.1.9 Evaluate functionality and features of downloadable XHTML freeware authoring IDE's to create basic Web sites (e.g., Homesite, CuteHTML.	**2.11.2** Evaluate a GUI HTML editor according to the W3C Authoring Tool Accessibility Guidelines.
32.1.10 Create and add unordered lists **32.1.11** Create and add ordered lists.	**2.1.3** Use HTML tags to format paragraphs and text.
32.2 Students create a basic template.	
32.2.1 Compare and contrast the advantages and disadvantages of a template.	
32.2.2 Understand and define the components of a template (library, editable region, repeating table, etc.)	
32.2.3 Plan and create a basic template.	
32.2.4 Apply template to a Web site.	
32.3 Students demonstrate knowledge of graphics and multimedia.	
32.3.1 Insert and align inline graphics. **32.3.3** Demonstrate how to resize a graphic using the proper tool.	**2.2.1** Incorporate graphical images into HTML pages. **2.2.3** Add lines, colors and tiles background images to HTML pages.
32.3.2 Use XHTML tags to describe multimedia.	**2.2.5** Perform advanced image formatting techniques.
32.3.4 Explain the concept of an image map. **32.3.5** Locate and downloadable freeware that generates an image map (e.g., MapThis, MapIt). **32.3.6** Create an image map from a graphic utilizing image map generation.	**2.2.4** Create and link client-side image maps.
32.3.7 Demonstrate how to insert and play an audio file.	**2.10.5** Identify common proprietary Web site and page enhancements elements, including: Macromedia Flash and Shockwave.
32.4 Students link Web documents	
32.4.1 Understand and demonstrate absolute and relative linking to other documents (PDF, XHTML,	**2.1.4** Create HTML hyperlinks for text, images, local files, and remote sites

DOC, XLS, E-mail, etc.). **32.4.2** Write an XHTML anchor code that links to another location within the document and/or site. **32.4.3** Link one Web page to another by clicking a graphic image.	(internal and external links).
32.5 Students utilize forms in an XHTML document	
32.5.1 Discuss the concept of a form on a Web document and the various tags that can be contained within the form (e.g., text entry fields, radio buttons, submit button). **32.5.2** Design a basic form from given specifications, utilizing a variety of input controls (e.g., text entry fields, radio buttons). **32.5.3** Write the code to add a form to an XHTML document.. **32.5.4** Write the code for a text entry field. **32.5.5** Write the code for a radio button. **32.5.6** Write the code for a check box button. **32.5.7** Write the code for a pull down menu. **32.5.8** Write the code for a scroll box. **32.5.9** Write the code for a pull-down menu **32.5.10** Write the code for a submit button.	**2.4.1** Construct and test HTML forms.
32.5.11 Code default values for all input tags.	**2.4.2** Identify ways that CGI scripts can parse and transmit information froma form using CGI, including: using e-mail, FTP, HTTP, HTTPS.
32.6 Students create and format a table on an XHTML document.	
32.6.1 Write the XHTML code to insert a table. **32.6.2** Discuss the concept of table sizing on an XHTML document. **32.6.3** Modify a row to span several columns by utilizing the ROWSPAN attribute. **32.6.4** Modify a column by merging it with adjacent cells with the COLSPAN attribute. **32.6.5** Modify a row by merging it with adjacent cells with the ROWSPAN attribute. **32.6.6** Apply border attributes to a table (i.e., color, size, style, etc.) **32.6.7** Align text in a table utilizing the ALIGN= attribute. **32.6.8** Add color to table rows utilizing the BGCOLOR= attribute. **32.6.9** Control the dimensions of a table by utilizing the CELLPADDING= and WIDTH= table	**2.1.5** Design and format HTML tables to present information in an organized way.

attributes.	

CIW Objectives mapping to IDOE – Information Technology
Unit 33 – Web Site Development – Content Development and Technical Analysis

IDOE – Information Technology	CIW Foundations Objectives
Unit 33 – Web Site Development – Content Development and Technical Analysis	
33.1 Students gather data and identify client requirements and scope of work.	
33.1.1 Define audience and mission in accordance with client procedures. **33.1.2** Utilize affordable, reliable and relevant sources and methods for gathering requirements.	**2.7.1** Obtain input from stakeholders about acceptable technologies and color combinations. **2.13.3** Determine information and audience requirements for a site, including: stakeholders such as customers, employees, shareholders, suppliers.
33.1.3 Specify requirements and scope of work assuring they are accurate, complete, documented, updated on a regular basis and stored in an accessible and readable knowledge base for future reference.	**1.15.3** Define project scope and scope creep. **2.14.2** Identify fundamentals of project management, including: major stages of a Web design/development project cycle.
33.1.4 Analyze data security and privacy concerns.	**2.16.5** Identify the importance of SSL/TLS to a transaction that contains sensitive information.
33.1.5 Analyze end user needs and constraints.	**2.12.3** Test Web pages in multiple Web browsers.
33.1.6 Gather information regarding global considerations (e.g., time zones, language, cultural sensitivities).	**2.16.4** Identify issues related to working in a global environment, including: different currencies, multi-lingual issues, international shipping, supply chain, legal and regulatory issues.
33.2 Students review technical information and restraints.	
33.2.1 Consider technical factors (e.g., server load, screen resolution, hard drive space, bandwidth, database performance, etc).	**2.12.2** Estimate download time for Web documents. **2.13.2** Collaborate with technical (e.g., IT) and non-technical (e.g., marketing) members of the organization to ensure sites meet requirements.
33.2.2 Consider and address feasibility, usability, extensibility, accessibility and maintenance issues.	**2.14.3** Identify processes of pre-launch site/application functionality testing,

	including: checking hot links, testing with various browsers, testing against corruption of your e-commerce site, load testing, access of the site, testing with various connections.
33.2.3 Assess budget and requirement constraints and approvals.	
33.2.4 Research and compare software tools as to the effectiveness for the work to be done and ability to integrate into the existing organization system.	**2.11.1** Evaluate a GUI HTML editor according to the W3C Authoring Tool Accessibility Guidelines.
33.2.5 Research and consider accessibility laws, privacy laws, and regulatory issues.	**2.7.3** Verify complience with government and industry accessibility standards, including: W3C Web Accessibility Initiative (WAI), U.S. Government Section 508, Americans with Disabilities Act (ADA) **2.14.1** Define legal issues realated to a Web site, including: licensing copyrighted material, scope of copyright, reach of copyright, copyrighting process, copyright infringement and consequences.
33.2.6 Assess implementation risk and communicate to appropriate personnel.	**2.13.5** Communicate the Web site plan effectively both orally and written.
33.2.7 Research and address system performance and availability requirements.	**2.16.6** Identify the importance of online indexing and cataloging.
33.3 Students demonstrate knowledge of usability and interface design.	
33.3.1 Discuss ADA section 508 complimentary requirements. **33.3.2** Discuss assistance devices and their interface with Web pages.	**2.7.3** Verify complience with government and industry accessibility standards, including: W3C Web Accessibility Initiative (WAI), U.S. Government Section 508, Americans with Disabilities Act (ADA)
33.3.3 Identify the fundamentals of interface design (e.g., usability, navigation, use of color, functionality, etc).	**2.2.2** Identify the uses and benefits of various graphic file formats, including: GIF, GIF89a, JPEG, PNG. Distinguish among other formats, including: TIFF, BMP. **2.3.2** Identify ways that color affects the principles of line, value, shape and form in Web pages.
33.3.4 Use structured approaches to develop text content.	**2.7.2** Create an initial Web site diagram (i.e., story board), and translate that into a site map.
33.3.5 Examine psychological and cultural implications.	**2.16.4** Identify issues related to working in a global environment, including: different

	currencies, multi-lingual issues, international shipping, supply chain, legal and regulatory issues. **2.3.3** Identify and demonstrate the impact of color combinations to various audiences and cultures. 2.15.6 Address diversity and corporate/organizational culture when communicating your message by customizing meetings and message delivery, and listening for responses.
33.4 Students apply knowledge of Web hosting.	
33.4.1 Compare the advantages and disadvantages of running your own server vs. using a server provider. **33.4.2** Identify hardware requirements for a server. **33.4.5** Evaluate hosting providers (i.e., size, legitimacy, security, bandwidth allocation, etc).	**2.18.2** Investigate cost associated with placing and developing your own server.
33.4.3 Identify server software options and security implications	**3.4.3** Choose the correct server to fulfill a specific business/organizational need.
33.4.4 Demonstrate the process of ordering a domain name.	**1.4.1** Define the purpose of the Domain Name Service (DNS) **1.4.2** Identify Internet domain names, including: top-level or original domains (edu, com, net, gov, org), country-level domains (e.g., uk, ch, tv), and newer domains (e.g., biz, info). **1.4.3** Describe the hierarchial structure of DNS. **1.4.4** Identify basic domain server roles.
33.4.6 Explain how to assign a domain name to a DNS server.	**3.4.2** Identify the functions and features of common Internet-based services and identify protocols used by each, including: file, print, HTTP, proxy, caching, mail, mailing list, instant messaging, media, DNS, FTP, news, certificate, directory, catalog, fax, transaction, mirrored, UNIX.
33.4.7 Comply with TCP/IP (Transfer Control Protocol/Internet Protocol).	**3.1.5** Define nature, purpose and operation essentials of Transmission Control Protocol/Internet Protocol (TCP/IP).
33.4.8 Upload files to server using secure FTP.	**2.11.6** Publish (i.e., upload) Web pages and sites to a Web server.
33.4.9 Publicize the site (e.g., optimize search engine placement.	**2.1.3** Use HTML tags to format paragraphs and text.
33.4.10 Collect/analyze usage statistics.	**2.18.4** Activate features provided by managed services (e.g., CGI, forms).

33.5 Students develop, present and assess concept alternatives.	
33.5.1 Present an appropriate number of concepts to all relevant stakeholders.	**2.13.3** Determine information and audience requirements for a site, including: stakeholders such as customers, employees, shareholders, suppliers.
33.5.2 Consider and document concept alternatives.	**2.15.5** Interpret verbal and non-verbal and written feedback.
33.5.3 Select appropriate concept.	**2.13.6** Obtain and document feedback, then improve the site, including: working closely with sales and marketing to evaluate site effectiveness.
33.6 Students prepare preliminary design	
33.6.1 Organize content information in order to meet concept objective.	**2.7.2** Create an initial Web site diagram (i.e., story board), and translate that into a site map.
33.6.2 Gather a consensus among all stake holders regarding the organization of information	**1.15.2** Identify components of a needs analysis, including: receiving, evaluating, and processing input; determining customer needs. **2.13.3** Determine information and audience requirements for a site, including: stakeholders such as customers, employees, shareholders, suppliers
33.6.3 Follow company guidelines and practices in implementation of the concept design.	**2.15.6** Address diversity and corporate/organizational culture when communicating your message by customizing meeting and message delivery, and listening for responses.
33.7 Students prepare functional, content, testing, and technical specifications	
33.7.1 Prepare functional, content, testing and technical specifications in a clear and precise manner to include detail on all product features.	**2.13.2** Collaborate with technical (e.g., IT) and non-technical (e.g., marketing) members of the organization to ensure sites meet requirements.
33.7.2 Prepare data security and privacy requirements.	**2.16.5** Identify the importance of SSL/TLS to a transaction that contains sensitive information.
33.7.3 Publish and regularly update functional, content, testing and technical specifications.	**2.14.4** Manage existing sites (e.g., remove dead links and/or upgrade connectivity when necessary).
33.7.4 Integrate client and end-user needs into technical specifications. **33.7.5** Describe software, communication protocols and programming languages in technical specifications.	**1.15.6** Explain common models for information flow and reporting between IT an upper management, as well as IT and other areas of the organization, including: Identifying project approval steps.

	2.13.4 Document Web site plan.
33.8 Students create and refine preliminary design or prototype.	
33.8.1 Implement all required design features in a prototype. **33.8.2** Include representative functional features in a prototype.	**2.7.2** Create an initial Web site diagram (i.e., story board), and translate that into a site map.
33.8.3 Review and refine the prototype based on client feedback, new information and technical considerations.	**2.12.1** Test and validate Web documents. **2.13.6** Obtain and document feedback, then improve the site, including: working closely with sales and marketing to evaluate site effectiveness.
33.8.4 Evaluate the effectiveness of the software tools chosen for the project in the prototype.	**2.7.4** Validate Web page design according to technical and audience standards adopted by employers. **2.7.5** Verify Web site usability, viewability, and browser compatibility.
33.8.5 Complete prototype on time.	**2.14.2** Identify fundamentals of project management, including: major stages of a Web design/development project cycle. **1.15.3** Define project scope and scope creep
33.9 Students develop project plan.	
33.9.1 Identify key stakeholder requirements in the project plan.	**2.13.3** Determine information and audience requirements for a site, including: stakeholders such as customers, employees, shareholders, suppliers.
33.9.2 Develop a time line to include project schedules, resource allocations, dependencies, milestones, functional and technical specifications, all data models, site maps, constraints and risks in the project plan.	**1.15.1** Identify components of the project triangle. **1.15.2** Identify components of a needs analysis, including: receiving, evaluating, and processing input; determining customer needs. **1.15.3** Define project scope and scope creep. **1.15.4** Use project management software and charts (e.g., Gantt charts) to determine a project timeline. **2.14.2** Identify fundamentals of project management, including: major stages of a Web design/development project cycle.
33.9.3 Include thorough testing of the solution and presentation of the testing results in the project plan.	**1.15.11** Define and perform a formal project review, including: acceptance test. **2.12.4** Document results of Web site functionality testing.
33.9.4 Include all specifications in the project plan.	**1.15.14** Map technical information systems

	functions, concerns and capabilities to business concerns.
33.9.5 Determine how documentation will be conducted in the project plan. **33.9.6** Document and regularly update the project plan throughout the project lifecycle in a previously determined format. **33.9.7** Distribute project plan according to company procedures.	**1.15.12** Identify the importance of documenting a project.